

## A New Global Digital Map of the Moon from Clementine Image Data

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A new cartographic control net for the Moon has been completed utilizing Clementine image data. Previous geometric control for the Moon contained errors of -1-2 km on the near side and up to -10 km for the far side. Selection of over 265,000 match points from -43,000 images has improved the global accuracy to -250 m/pixel. Several automated procedures were developed to aid in finding matchpoints, with a success rate exceeding 90%. These new mosaicking techniques will be applicable to future planetary datasets and are included in the ISIS software package available at no cost through the internet (<http://www.flag.wr.usgs.gov/USGSFlag/Data/software/isis.html>).

Matchpoints were processed at RAND for analytic triangulation. Absolute control was obtained by holding known locations (such as Apollo landing sites) as truth. Camera angles for each image were updated using a least squares fit to minimize offsets between matchpoints. The mean error for the entire Moon is less than 1 pixel. The final 1 km monochromatic basemap was constructed using 750 nm images except where gaps existed in the coverage; these gaps were filled using 900 nm images, empirically fit to match the brightness of the adjacent 750 nm data. The data have been normalized to a phase angle of 30° using an improved photometric function derived from Clementine and Galileo image data. Work is currently underway processing the remaining bands covering the wavelength range of 415-2780 nm.

Abstract submitted for 1996 DPS meeting

Date submitted: LPI electronic form version 5/96

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Special instructions: The larger poster size (4 x 8') is requested in order to show the full resolution of the new Clementine global control mosaic. Tue Aug 27 15:43:10 CDT 1996

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